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ABSTRACT

The purpose of this community study unit is to help fifth grade students understand the pathways energy takes as it flows through several communities. Each of these communities are examined as working systems. The energy pathways are similar, but slightly different as the energy flows through the members of each community. The unit involves many activities including first-hand experiences, lectures, information-giving, and values searching. A field experience to a pine plantation and to the Lee County (Florida) Nature Center is featured. This set of documents includes an overview, objectives, a field trip guide for teachers, and four sections of activities. Appendices include the 4Mat model, an application of this unit to the 4Mat model, a cognitive pre/posttest, a student book, a glossary, a discussion of scheduling considerations, and a parent permission form. (CW)

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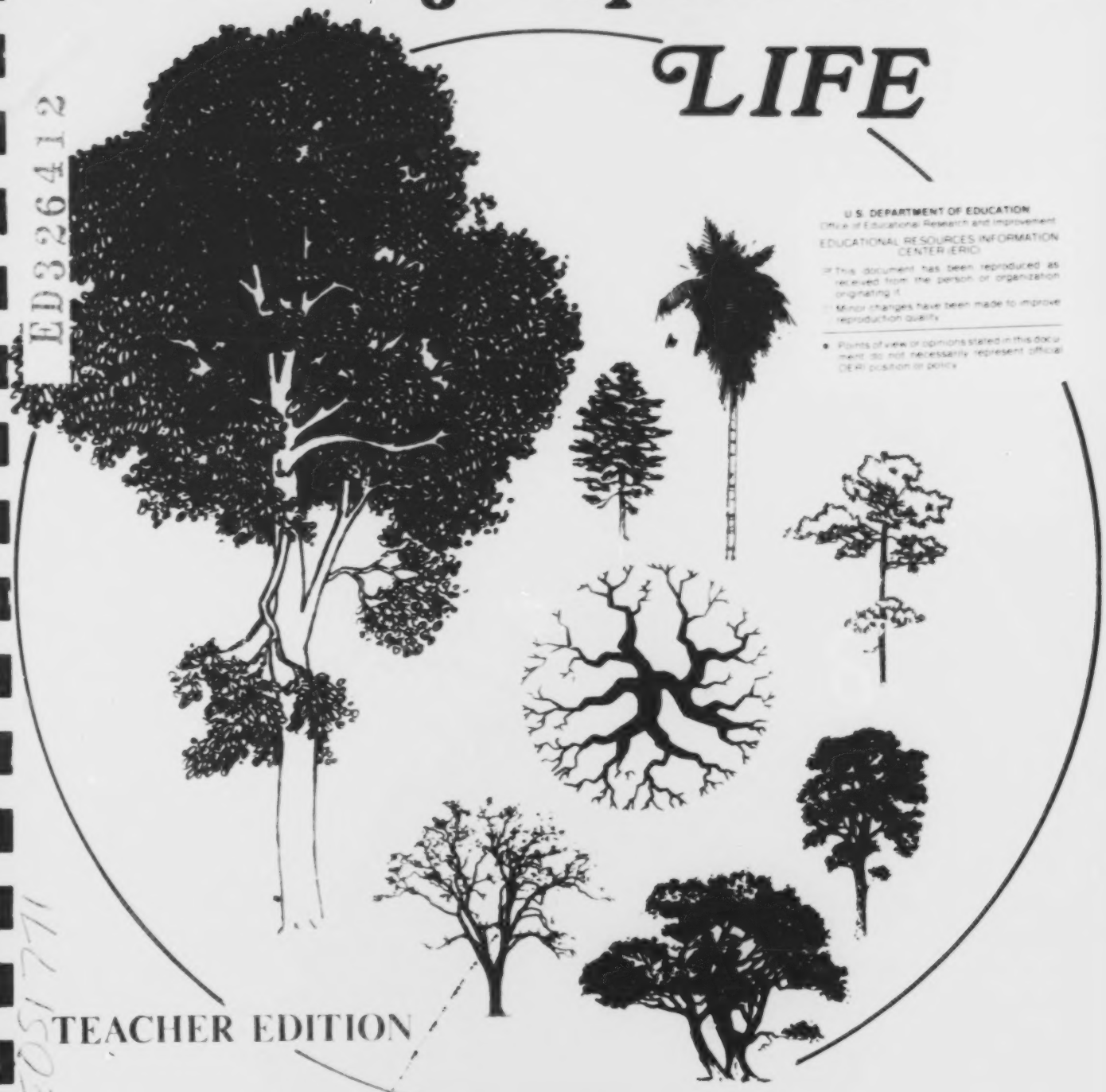

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TEACHER EDITION

COMMUNITY STUDY UNIT

GRADE 5

LEE COUNTY SCHOOLS

SE051771

9/85

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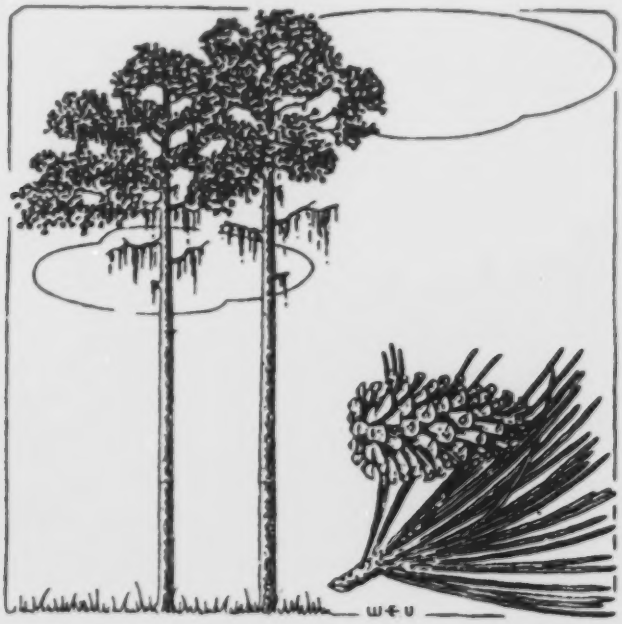
Overview

This unit is designed to help 5th grade students understand the energy dynamics and diversity of several communities. The students will participate in many hands-on activities in the classroom and on a field trip that will help them see the kinds of energy that come into and go out of a system. They will also be comparing two woodland communities to decide which one is more diverse and why diversity is important to a community.



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CONTINUUM CONNECTIONS

SOCIAL STUDIES

- List five important natural resources of the United States.
- Emphasize the major importance of conservation and protection of America's natural resources.
- Discuss and cite examples of natural resources in the United States and how they are used.

E-D 12 Identify reasons why consumer goods satisfy human wants.

E-D 14 Identify reasons why scarcity requires choices.

E-D 19 Identify how substitutions can be used when a natural resource becomes more scarce.

E-D 30 Define specialization as individuals or groups concentrating on one job rather than attempting to do many jobs.

SCIENCE

3 Understand that the human body is composed of nine systems.

4 Understand that diseases and disorders prevent the proper function of the human body.

7 Understand that plants reproduce in different ways.

MATH

5 Express the relationship between two numbers by using ">" (greater than), "<" (less than), or "=" (equal to).

15 Complete equations in horizontal and vertical form with multiplication.

21 Identify fractional relationships.

26 Determine linear measurements.

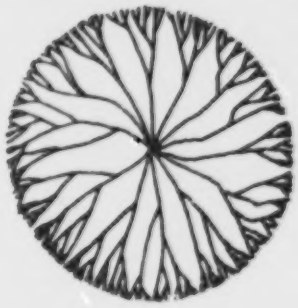
36 Read and determine relationships using graphs.

ENVIRONMENTAL

Explain that higher diversity increases the ability to adapt to or recover from sudden environmental change.

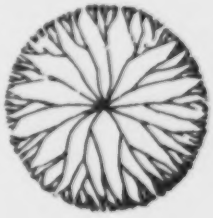
Recognize the energy pathways in many different systems.

CONCEPTS



1. The energy dynamics of a community are related to how a community functions and to the life it supports.
2. The more diverse a community, the more able it is to withstand environmental changes or stress.

OBJECTIVES

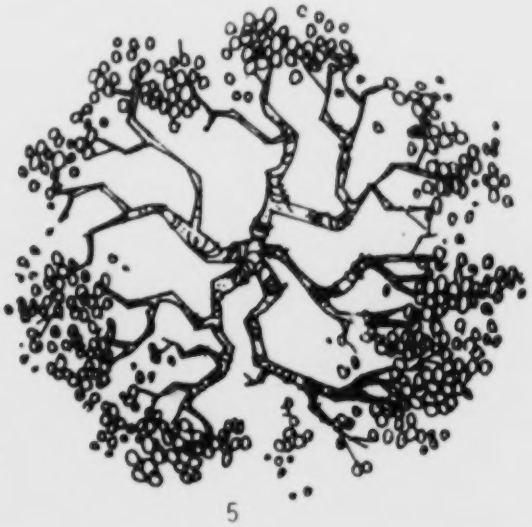


The student will be able to:

1. recognize a plantation as a community designed by humans for their own use;
2. recognize a naturally-succeeding forest as a community which receives little direct human impact;
3. differentiate between the energy dynamics of a tree plantation and that of a naturally-succeeding forest;
4. recognize that a pine flatwoods is more diverse than a pine plantation;
5. explain why higher diversity increases the ability to adapt to or recover from environmental change or stress;
6. recognize the energy dynamics of a community or system of which the student is a member (class, school grounds, supermarket, neighborhood);
7. draw parallels between the human body and other systems.

Introduction

The purpose of this community study unit is to help fifth graders understand the pathways energy takes as it flows through several communities found in Lee County. Each of these communities will be examined as a working system. Just like people, each community is different, each having its own unique elements, features, and inhabitants. The energy pathways are similar, but again, just as with people, each will be slightly different as the energy flows through the members of each community. The students will look at the various things that come into and go out of a community. The unit involves many activities including firsthand experiences, lectures, information-giving, and values searching.



A Reason for Learning

Section 1

The activities in this section should provide students with experiences that directly link the unit concepts with their personal life experiences. Students must also have a chance to discuss those connections with one another. In this initial phase of the unit students should discover a reason for learning the instructional concepts.

1. PRE-TEST

   The Cognitive Pre/Post Test can be found in the Appendix.

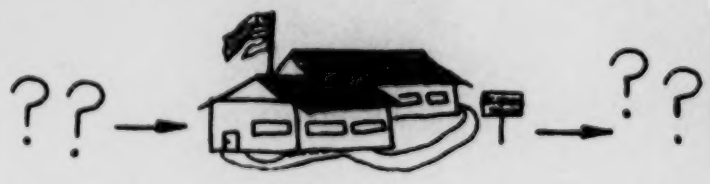
2. VARIETY IS THE SPICE OF LIFE

   Write the phrase "Variety is the Spice of Life" on the blackboard. Ask the students, as a homework assignment, to investigate the meaning of the phrase by asking their family and friends. Have them look at their collections of books, records, tapes, video games, clothes, shells, and other hobby collections. Do they have a variety or many kinds of records, shells, etc.? Why? Ask students if they agree that variety is the spice of life?

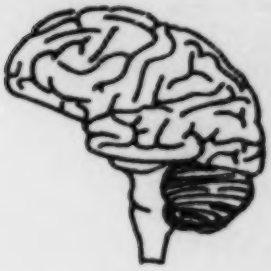
3. ENERGY DYNAMICS ON THE SCHOOL CAMPUS

   Have students work in groups of 4 or 5. Give the students the School Campus worksheets (a sample is in the Appendix) which will be the basis for their own brainstorming sessions about the energy input/output of their school campus. The students should be instructed to work together in small groups, and to come up with as many items as possible that come into the school and go out of the school grounds each day or week.

   You may need to help the students get started by suggesting they consider



how things get to and leave the school. What comes in cars, trucks, busses, etc? What takes things away: dump trucks, cars, busses, brains? This is the students' chance to produce as many answers as they can. Have the students write down everything that is said in their groups. Stress to them that all answers are O.K. for now. Don't praise or reject. Quantity first - quality later.



After the brainstorming session, have the students make up a composite sheet of all the answers in their groups. Display the worksheets in the classroom.

Have the students find out how the quantity of each of these things could be determined. Select some (e.g., water, # people) and measure them (water meter, bus records,or absentee records).

4. SUPERMARKETING

Have the students visit a supermarket as a homework assignment. At the market, each student should count and write down all the different kinds of Campbell's soups there are in the store. Make a composite list from all the student lists. Ask the students why they think there are so many different kinds of soup. What would happen if there were only one kind of Campbell's soup in the store? The students should begin to understand that the more kinds of soup Campbell's makes, the more they will sell. The more they sell, the more likely the company will survive because it will be making money.

Teaching & Learning... information

Section 2

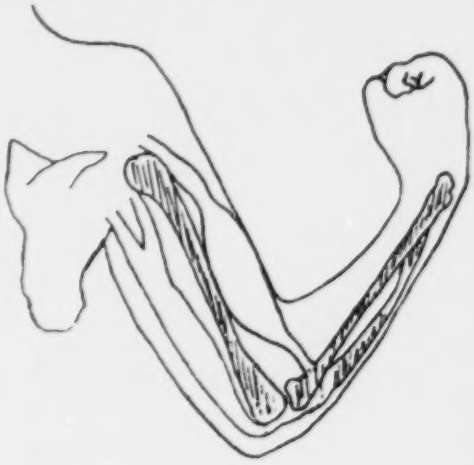
The activities in this section should focus on what the student <u>needs to know</u> in order to understand the concepts in the unit. The student should acquire information from the teacher, films, supplemental readings, the library, or experts, etc. in order to develop a foundation of knowledge basic to understanding the instructional concepts.

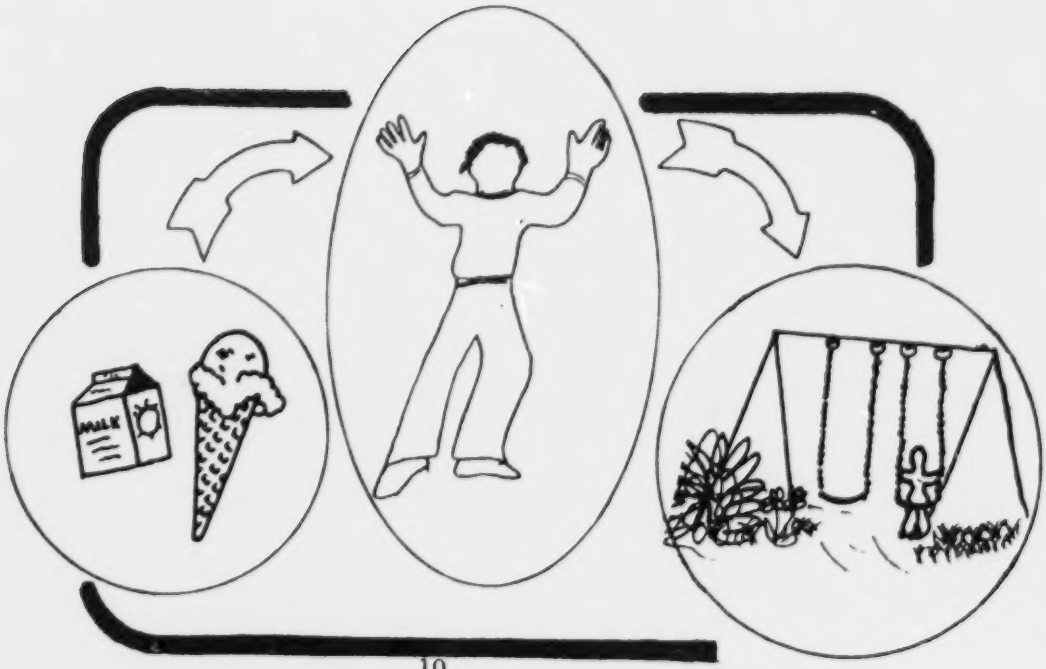
1. SCHOOL CAMPUS REVISITED

Using pictures from magazines, newspapers, etc., to represent items which come into and go out of the school, discuss the worksheets the students developed in the brainstorming session. Discuss the energy flow of the school. Everything that comes into the school should go out in one form or another, or be stored in the school. Remind the students that some items will come into the school in one form and will leave the school in another form. Point out how the inputs and outputs are transported to and from the school grounds. Some things to consider are: people, paper, electricity, telephone service, water, sewage, mail, food, and equipment.

2. PARALLELS

As they begin to see the connections among things that come into the school grounds and things that go out, use other systems and communities as examples (a city, a shopping center, the human body). The human body can be paralleled easily to the school community or to other communities. The human body is a system that receives matter and energy (food) and releases matter and energy (work, play, waste products).

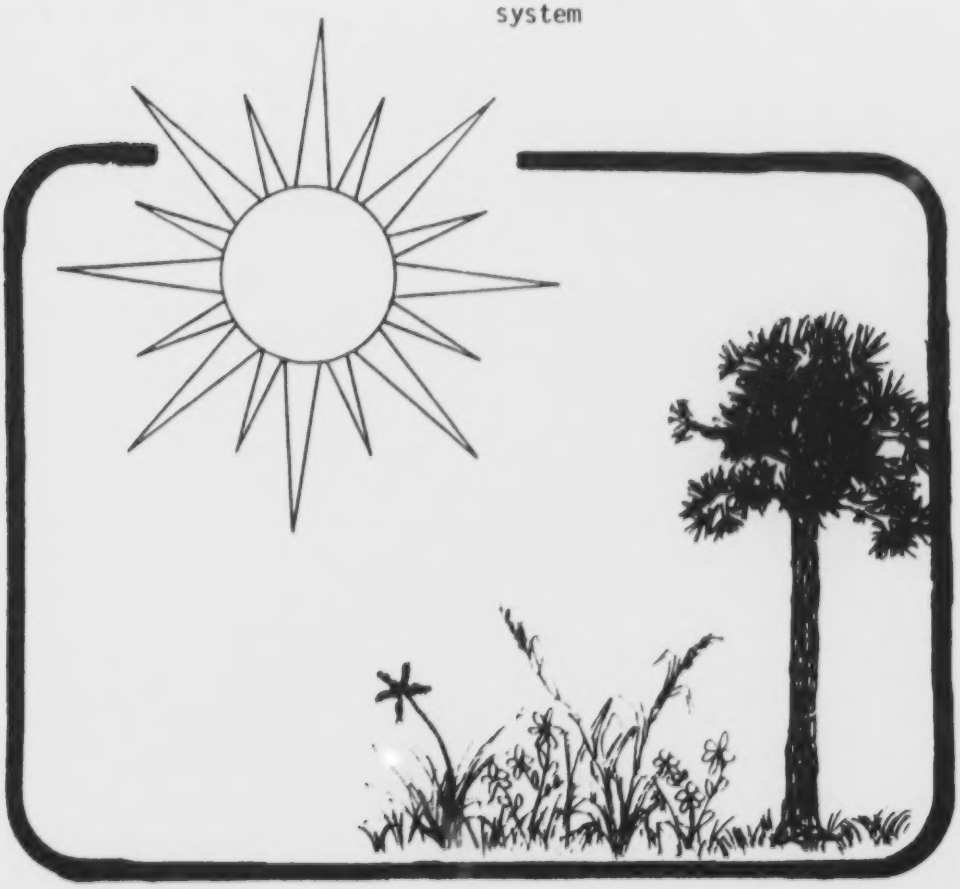




3. VOCABULARY

Give out the vocabulary list and discuss the terms relative to the unit. A glossary is included in the back of this packet.

community
disease
diversity
energy
energy dynamics
input
insect pest
naturally-succeeding forest
output
plantation
renewable natural resource
succession
system



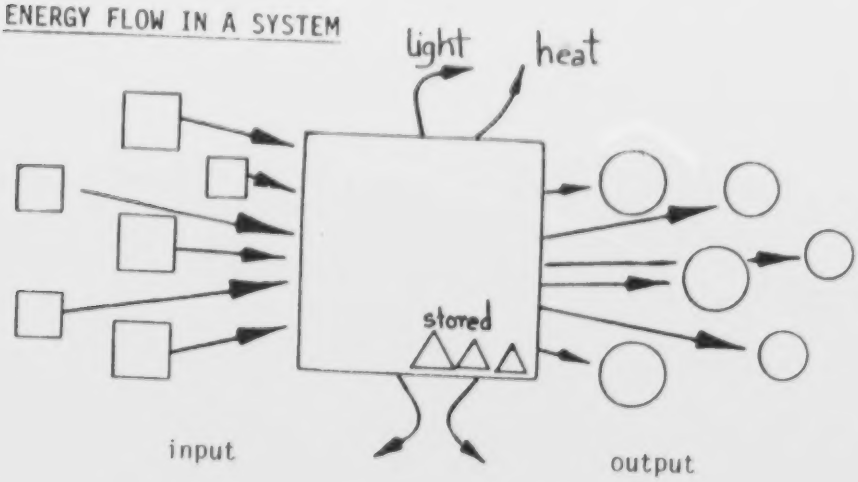
4. DIVERSITY AND SUCCESSION

Discuss the following information with your class.

"System" is a concept used by people to help explain how things work. A system is a group of items which function together and interact as a unified whole. The human body is composed of many of these systems (circulatory system, nervous system, digestive system, etc.). Other systems discussed in this unit are communities such as the school campus, a pine plantation, and a forest.

In these communities, matter and energy come in and go out giving the communities certain characteristics which are unique to each. Systems must have energy input to work. The kind of input a system receives often depends on human influence. If a community is designed by, or used heavily by, people, it will have extra energy flowing through it.

ENERGY FLOW IN A SYSTEM



System Balance Outcomes:

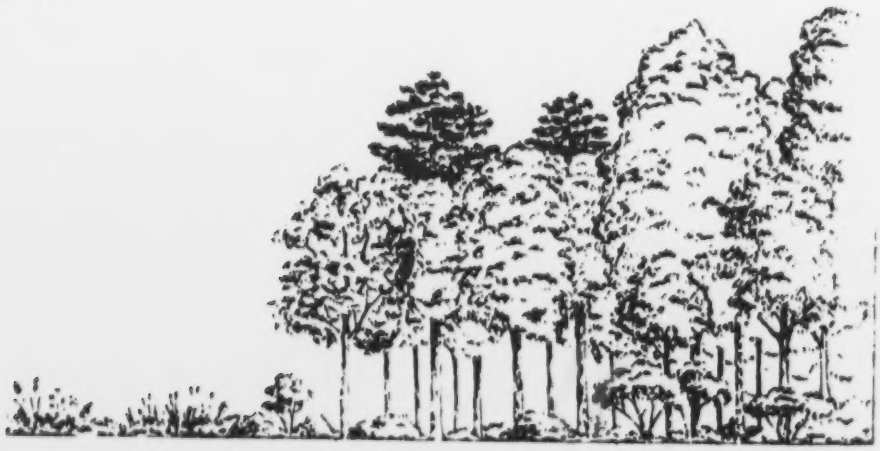
Input = Output = Steady State

Input greater than Output = Net Gain (Storage)

Input less than Output = Net Loss (Deficit)

Two types of communities are defined in this unit. They will be called human-designed and naturally-succeeding. The section three field trip takes the class to these two types of communities: a human-designed pine plantation and a naturally-succeeding pine flatwoods. The pine flatwoods is considered naturally-succeeding because the structure of the community changes in a predictable manner (succeeds) over time without human influence.

The succession occurs as one group of plants and animals replaces another in the same area over time. The first group of plants creates conditions in the soil and micro-climate which make it suitable for the next group to begin growth and so on.



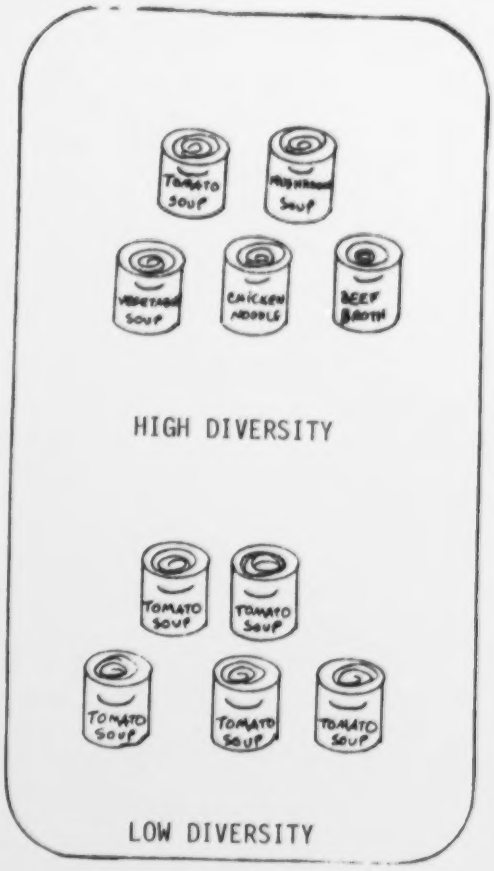
SUCCESSION- Field to Forest

Given the necessary climate and geology, a grassy field left undisturbed will succeed into a weedy, shrubby area. Conditions are then suitable for tree seedlings to become established. As the tree seedlings mature, the shrubs and weeds are displaced.

The area eventually becomes a forest with new ground cover. This process is called succession.

In a pine plantation, human influence does not allow this succession to occur. On the trip the students will investigate the matter and energy input and output of each community and try to determine how the differences affect the diversity of the communities.

Diversity is roughly equivalent to variety (in this case, the variety of plants and animals living in the systems). A highly diverse system is more able to withstand environmental change and stress than a less diverse system. For example, if the pine plantation were to be infested by an insect pest, the pest could kill or damage all the trees and the entire community could be lost. If the same were to occur in a naturally-succeeding forest, the pines may die but other plants would survive. The community would still exist but in an altered state.



A NOTE ABOUT FIRE: A SUDDEN ENVIRONMENTAL CHANGE

Very few people realize that fire is a very important part of our ecosystem here in Florida. A large portion of southwest Florida is made up of pine flatwoods, swamps, and hardwood hammocks. If we did not have periodic burns (fire), there would be less chance of survival for many of our plant communities.

Fire is essential to the survival of a pine flatwoods community. The slash pines found here in southwest Florida are fire-adapted. They have become fire-tolerant in areas that are frequently burned. The bark of the slash pine grows in many thin layers. These layers act as insulation in a fire and protect the inner living tissue of the tree. As the pine tree matures, the lower branches, for lack of sunlight, die and fall off. This protects the tree from intense burning in a ground fire.

A pine flatwoods community can very quickly become covered with grasses and underbrush. If this underbrush is not periodically burned, there is less chance for the pine seedlings to grow properly since they need much light. Fire also helps to rid the pine community of weak or diseased trees.

5. PROS & CONS

Discuss the advantages and disadvantages each community may have.

PINE PLANTATION	PINE FLATWOODS
• high lumber yield	• low lumber yield
• susceptible to disease	• less susceptible to disease
• low diversity of plants and animals	• high diversity of plants and animals

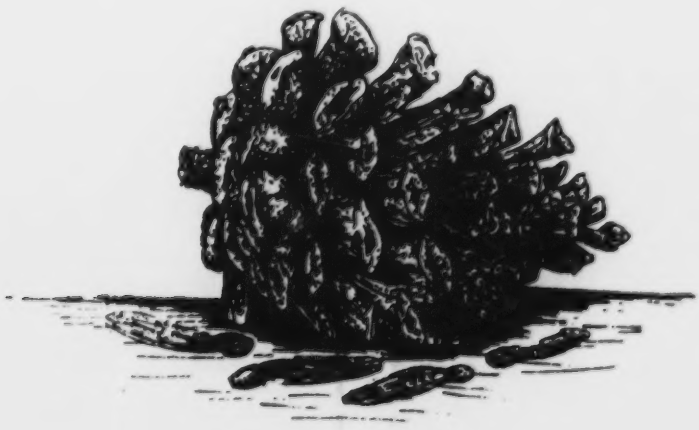
(Please have the students add to this list.)

6. HUMAN INFLUENCE

Speculate how human influence could make a difference in the two communities.

7. TRIP PREVIEW

Give the students instructions as to proper dress and what to bring on the field trip. Students should wear long pants, closed shoes, and dress casually for walking in the woods. Students should bring a pencil or pen and lunch.



Trying It Out ... field trip

Section 3

The activities in this section establish the required information procedures, rules, and student work assignments for the community study field trip. The primary purpose of this section includes firsthand field trip experiences and activities for students to try out in a real world situation the information they have acquired.

1. FIELD EXPERIENCE INFORMATION

The class will be transported on a bus to the field site by an EE/IDS field leader. The EE/IDS staff member and the classroom teacher will facilitate the field trip.

The students will visit two woodland communities - a pine plantation and a naturally-succeeding pine flatwoods. The field experience involves working in a semi-programmed booklet and doing activities that will contribute to the understanding of the unit concepts. The activities are described in the student workbook and will be led by the field leader. A solo (quiet observation time) and a sharing session will follow. A copy of the student workbook is included in this packet.

LEADERSHIP RESPONSIBILITIES

The EE/IDS field leader will:

1. provide bus transportation;
2. select appropriate field study sites;
3. provide cooler for lunches;
4. provide student fieldbooks;
5. establish expectations for behavior;
6. initiate all field instruction;
7. introduce solo and lead discussion;
8. provide individual help as needed.

The classroom teacher will:

1. pre-test students;
2. implement pre-trip activities;
3. secure parent permission forms;
4. arrange for lunches and ice;
5. assure that proper clothing (long pants, tie-on closed shoes) is worn by all;
6. help maintain behavior;
7. assist with field instruction;
8. coordinate lunch distribution;
9. implement post-trip activities;
10. post-test students.

Self Teaching & Extending

Section4

The activities in this section should encourage students to self discover "new connections" that integrate their experiences with new applications related to the instructional concepts. Students are encouraged to teach others what they know, or to create new ways of expressing or applying what they have learned.

1. DESIGN A COMMUNITY

Have groups of students design and create two different communities, one that is highly diverse, and one that is less diverse. The creation could be in the form of a poster, map, drawing, collage, model, etc. Have the students explain the matter and energy input and output of each community, describe the kinds of succession that may occur, and tell what might happen if different kinds of stress were placed on each community (fire, disease, too many people, etc.). The communities may be incorportated into a bulletin board for display.

2. HUMAN PARALLELS

Have the students parallel the diversity of the human body to the diversity of the forest and the pine plantation. They may write or draw and label the two systems, drawing parallels to similar characteristics. Which is more diverse? Which is more complicated? Which system is more interdependent?

3. ILLUSTRATED STORY

Have the students create a mural of a field succeeding to a forest. Create a story that describes the changes, and as it is being told, the students can change the bulletin board to match the action of the story. Present the story to another class.

4. POST-TEST

Readminister the Cognitive Pre-Post Test.

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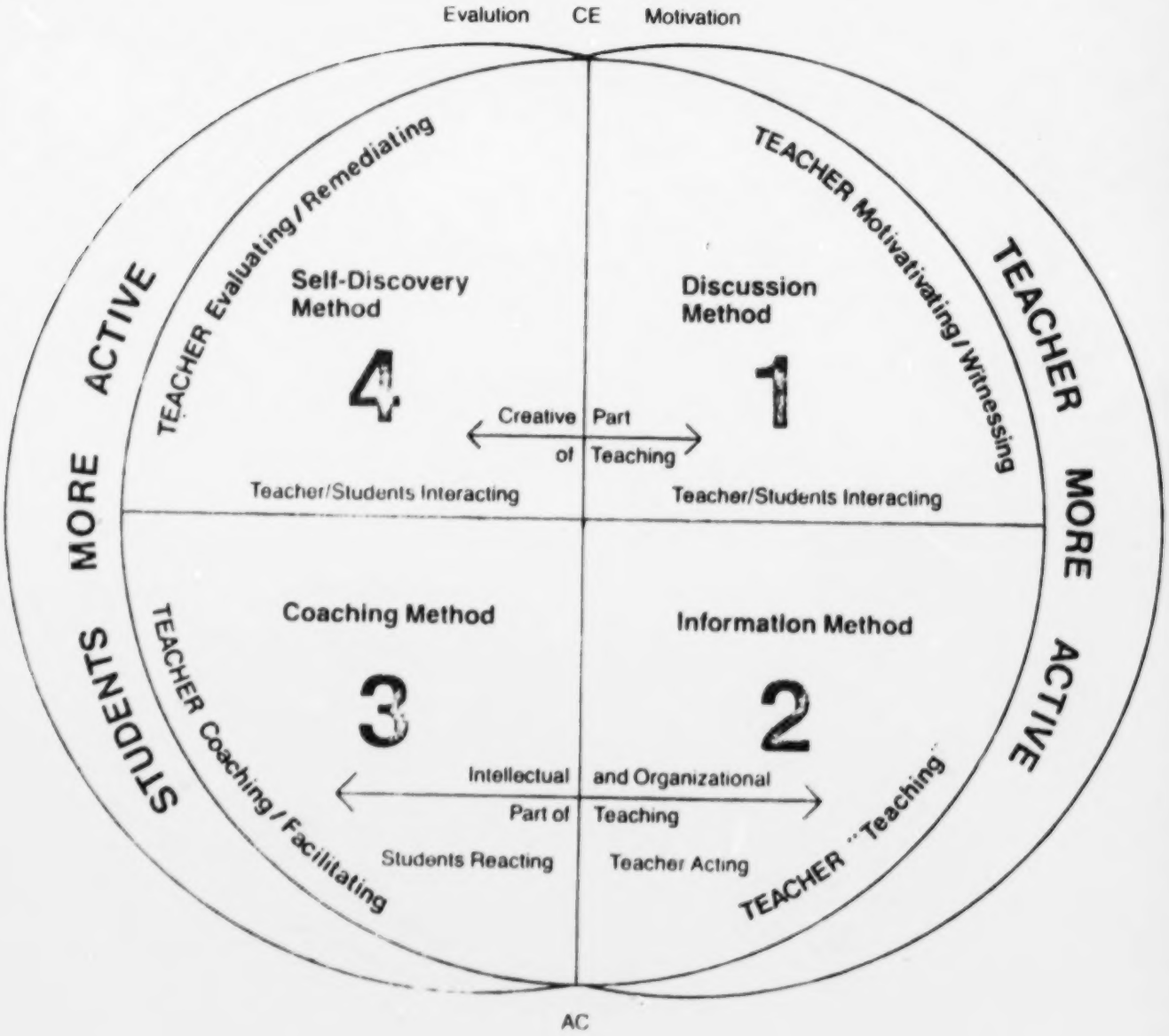
The Complete 4MAT System Model

The Teacher's Role: A Recapitulation

The teacher's role changes as s/he moves through the cycle of learning:

- from Motivator/Witness
- to Teacher/Information Giver
- to Facilitator/Coach
- to Evaluator/Remediator and Resource.



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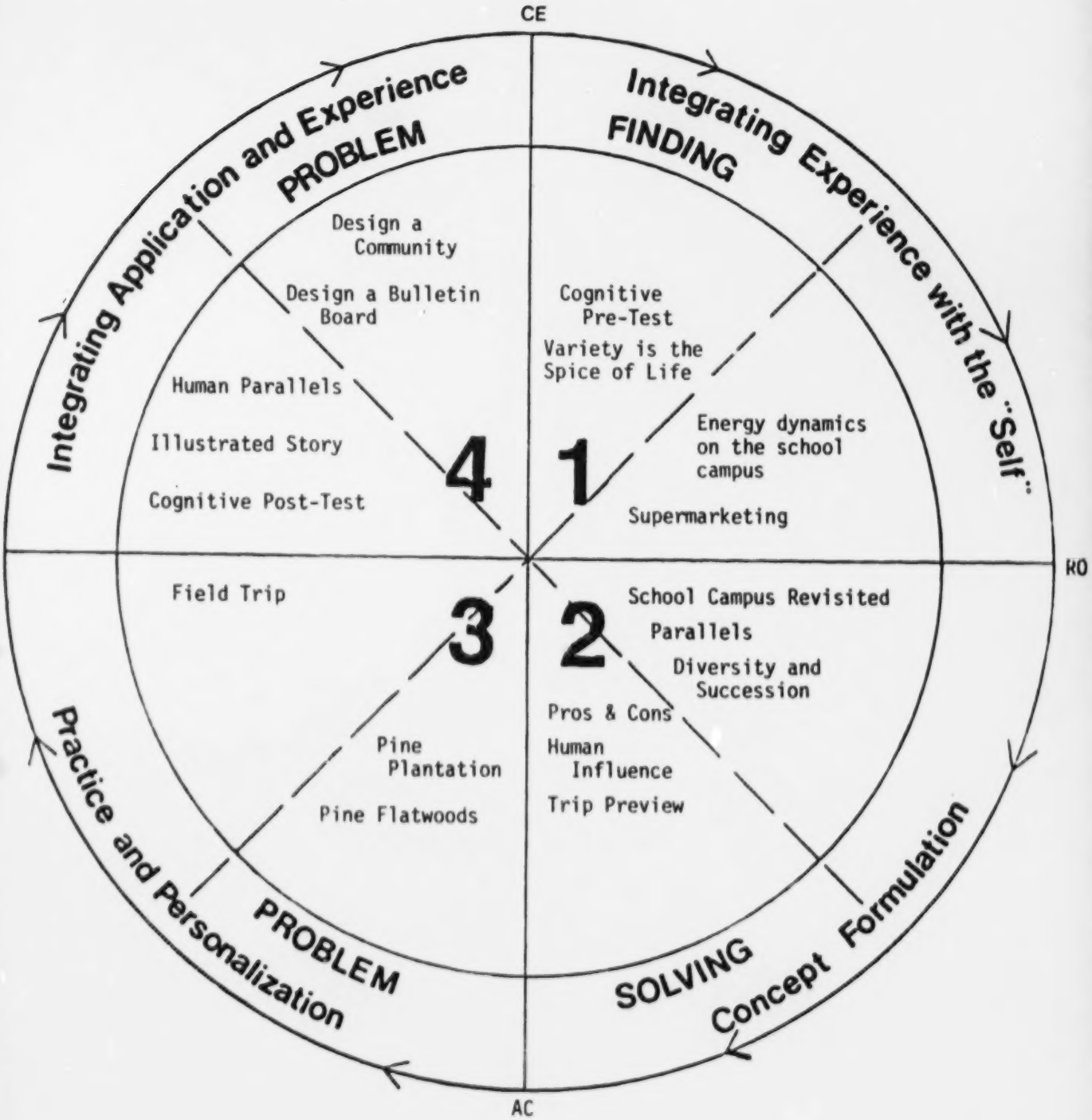
4MAT SYSTEM MODEL
FOR
THE SPICE OF LIFE STUDY UNIT



COGNITIVE PRE/POST TEST

5th GRADE - SPICE OF LIFE

Read the following statements. Select the answer that is most correct.

1. Diversity means nearly the same as

   [a] instability.
   [b] naturally-succeeding.
   [c] variety.
   [d] change.

2. Energy can be defined as

   [a] power.
   [b] electricity.
   [c] the rate at which work is completed.
   [d] the ability to do work.

3. One renewable natural resource is

   [a] wood.
   [b] oil.
   [c] sand.
   [d] uranium.

4. A system with high diversity can

   [a] be easily upset.
   [b] never produce much.
   [c] withstand many stresses.
   [d] almost never be found.

5. Many low diversity systems

   [a] require a great deal of human input.
   [b] are almost immune to disease.
   [c] support a wide variety of animals.
   [d] support a wide variety of plants.

6. Succession is a process of

   [a] gradual community change.
   [b] development through periodic leaps.
   [c] rapid advancement to the top of one's career.
   [d] reverse change back to previous stages.

7. A pine plantation

   [a] is very diverse.
   [b] requires periodic human maintenance.
   [c] is harvested every year.
   [d] has many types of trees.

8. When a fire burns in a pine flatwoods

   [a] the forest is usually destroyed.
   [b] the trees will all die but new seedlings will sprout.
   [c] only the palmettos will be killed.
   [d] most of the plants will recover unless the fire reaches the tree tops.

9. A system is a group of items which

   [a] are not related but happen to be close together.
   [b] function as a unified whole.
   [c] all have the same shape.
   [d] were made at the same factory.

10. The "spice of life" is

    [a] salt.
    [b] a pine flatwoods.
    [c] parsley.
    [d] variety.

11. When you study the energy dynamics of a forest, you study

    [a] the energy cycle.
    [b] nuclear reactors.
    [c] how energy continuously cycles and is never lost.
    [d] how energy moves through a system.

12. One good thing about a pine plantation is its
    [a] stability.
    [b] resistance to disease.
    [c] high productivity.
    [d] high diversity.

13. One good thing about a pine flatwoods is its
    [a] great production of lumber.
    [b] ability to withstand changes.
    [c] sensitivity to flooding.
    [d] structural simplicity.

14. An attack of pine tip moths in a pine plantation
    [a] could destroy its usefulness for lumber.
    [b] would do little visible damage.
    [c] would only temporarily cause damage.
    [d] would end its ability to support wildlife.

15. Diversity in a human community
    [a] only leads to friction.
    [b] increases stability.
    [c] is hard to maintain.
    [d] is very expensive.

16. A naturally succeeding forest is one that
    [a] requires occasional human care.
    [b] changes slowly on its own.
    [c] almost always is destroyed by fire.
    [d] eventually will become a field.

17. A company will be most stable if its products are
    [a] uniform.
    [b] similar.
    [c] diverse.
    [d] expensive.

18. A community is

[a] a group of organisms in a specific area functioning together.

[b] strictly a town or city.

[c] a system of climate and succession.

[d] a system of high diversity.

19. The energy input of a pine plantation is

[a] only from the sun.

[b] from the sun and other fuels.

[c] very low.

[d] from solar and hydro power.

20. The energy input of a pine flatwoods is

[a] only from the sun.

[b] from the sun and other fuels.

[c] very low.

[d] from solar and hydro power.

THE SPICE OF LIFE

COMMUNITY STUDIES UNIT, GRADE 5

PRE/POST COGNITIVE TEST ANSWER KEY

ITEM	ANSWER	ITEM	ANSWER
1.	c	11.	d
2.	d	12.	c
3.	a	13.	b
4.	c	14.	a
5.	a	15.	b
6.	a	16.	b
7.	b	17.	c
8.	d	18.	a
9.	b	19.	b
10.	d	20.	a

GLOSSARY

community - a group of people, plants, and animals in a specific area that live and function together.

disease - illness, sickness, or disorder causing symptoms of ill health.

diversity - variety; the number of different kinds of plants, animals, or parts of a community or system.

energy - the ability to do work; that which makes a system function.

energy dynamics - the pathways energy takes through a community or system.

input - all that goes into a system; mostly forms of energy and materials.

insect pest - an insect that harms or destroys something of importance to humans.

naturally-succeeding forest - a forest community which changes in a predictable manner without human impact.

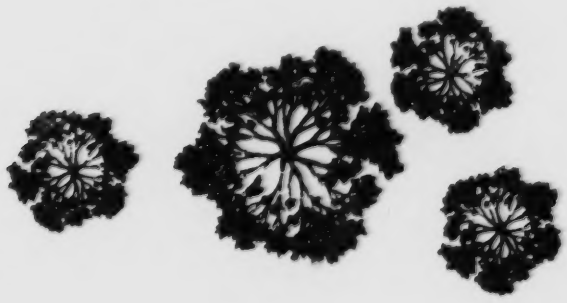
output - all that comes out of a system.

plantation - a community of trees or other plants which has been designed by humans for their own use.

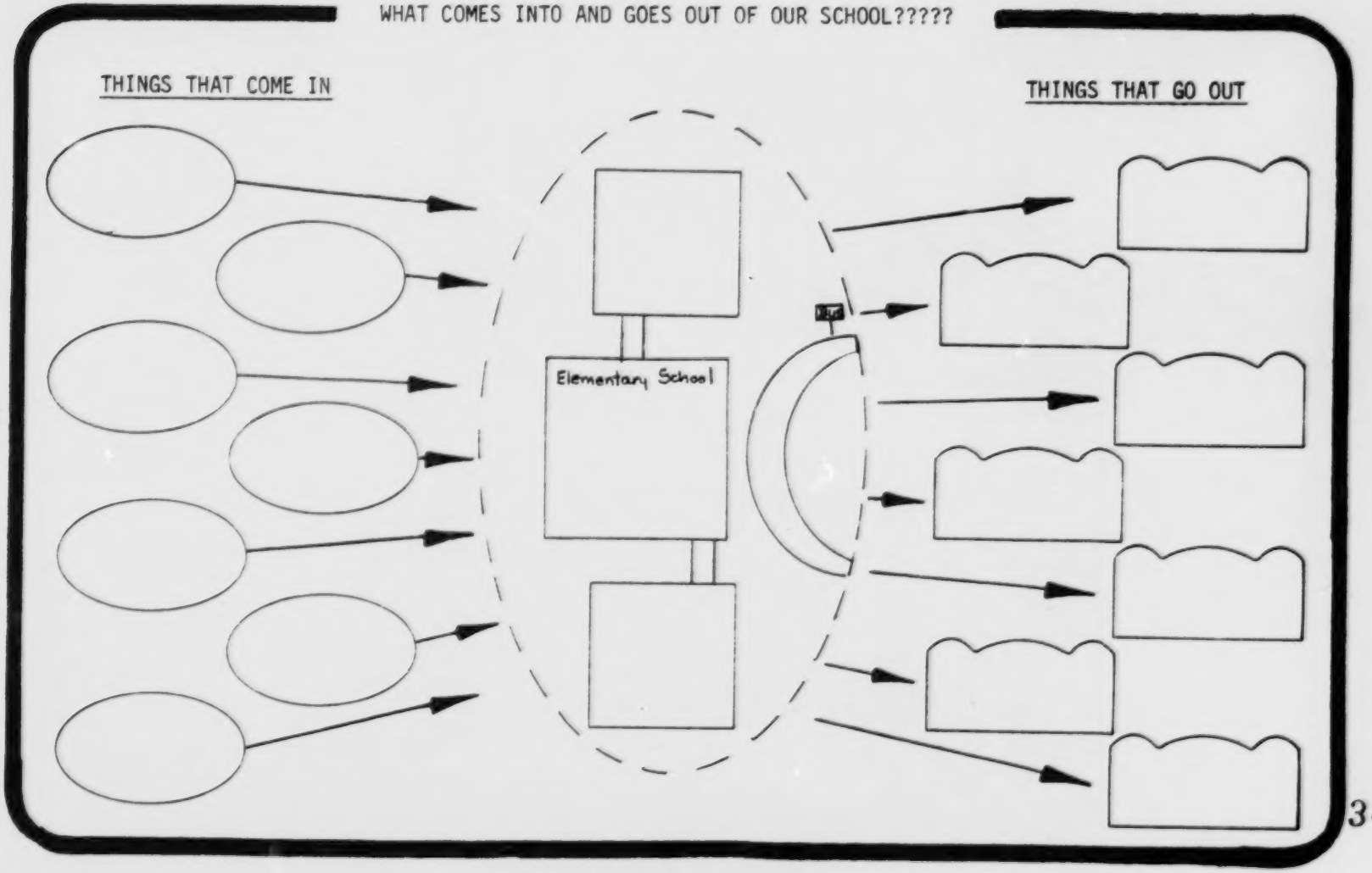
renewable natural resource - a resource, something that is needed, that can be replenished, such as crops or rainfall.

succession - the process of one community being replaced by another.

system - a group of items which function together and interact as a unified whole.

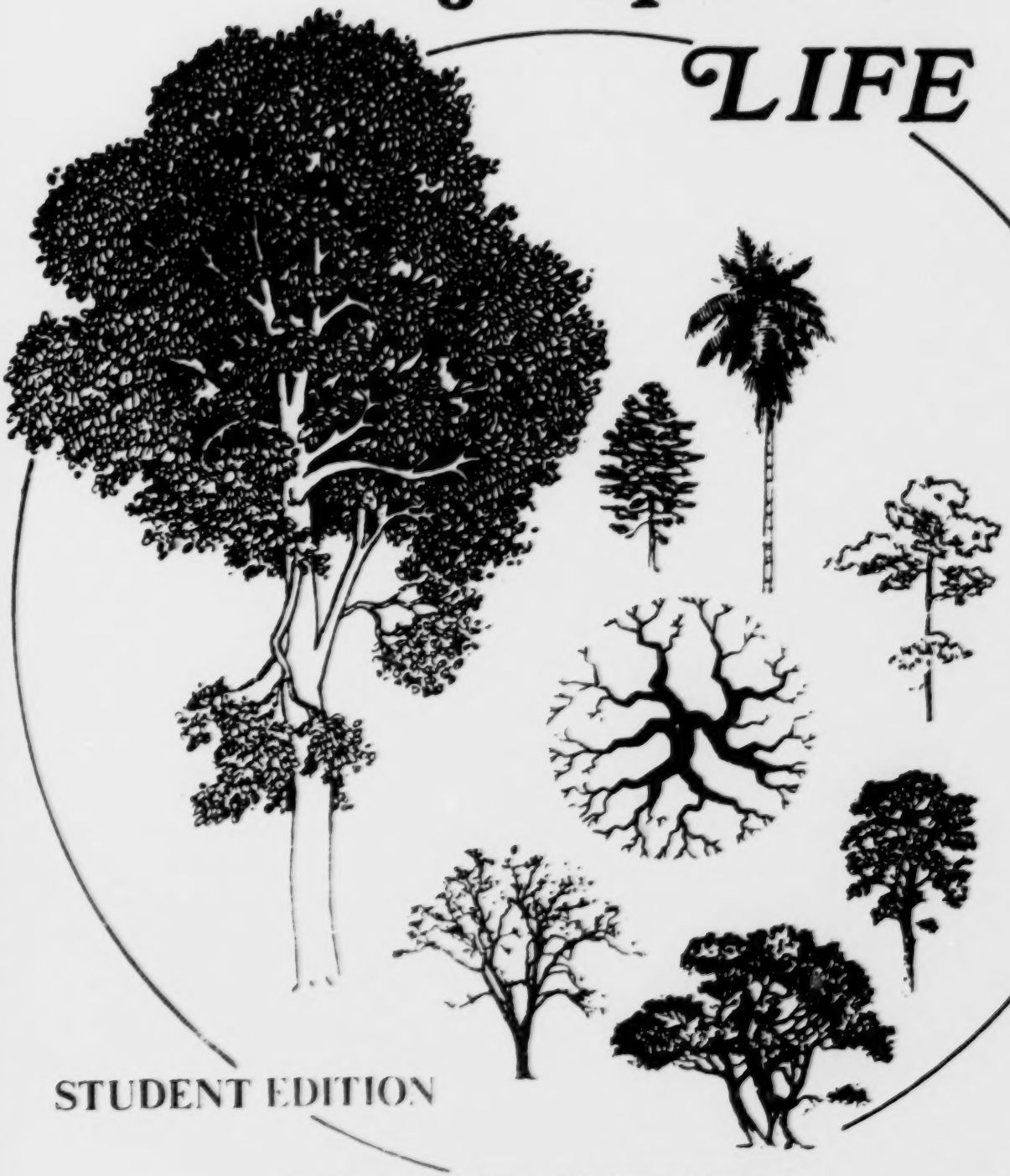


WHAT COMES INTO AND GOES OUT OF OUR SCHOOL?????



SCHOOL CAMPUS WORKSHEET

The Spice of LIFE



STUDENT EDITION

COMMUNITY STUDY UNIT

GRADE 5

LEE COUNTY SCHOOLS

35

THE SPICE OF LIFE

Today you will be visiting two communities. Once you complete this booklet you should be able to tell the things that come into and go out of each community. You will also be able to tell which community is more diverse (has more variety). You should work in groups of three to six people. Read the booklet carefully. Record your answers accurately. Answer all the questions.

BACKGROUND INFORMATION

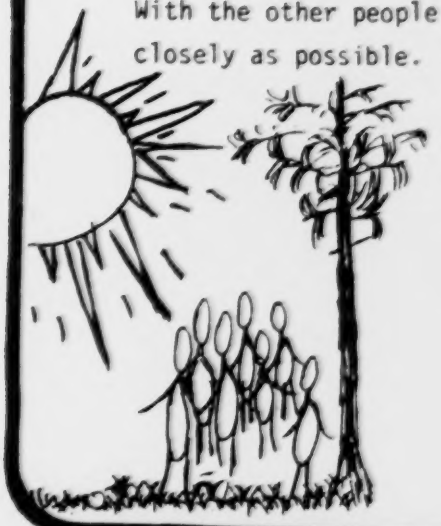
The energy that goes into a community can affect the kinds of plants and animals that live there. The energy can also affect the products that come out of the community. A community with many different kinds of plants and animals is more diverse, or has more variety, than a community with very few kinds of plants and animals. One of the woodland communities you will visit today receives energy solely from the sun. The other community receives energy from the sun as well as various other sources. One community has many different kinds of plants. One has very few kinds of plants. It is your task today to determine the differences between these communities.

THE PINE PLANTATION

A tree farm is sometimes called a plantation. This is a pine plantation. A pine plantation is planted by people for their own use. Before the trees are planted, all other trees and plants are removed from the area. In this pine plantation, slash pine was planted. Slash pine grows very fast. When the small trees were one year old they were moved from a nursery to the plantation. The foresters planted these trees during the winter months.

The trees are planted six feet apart in rows. The rows are ten feet apart. When we plant trees in rows we call the area a tree plantation. The slash pine plantation is very much like a farmer's corn field. The big difference is that the trees take about 15 years to grow to the right size for harvesting, instead of a single season. The trees in this plantation will be used to make paper products. If they were to be used for lumber, they would have to grow longer and get bigger.

Action



With the other people in your group, crowd together as closely as possible. Get together with other groups and crowd together. While the group is together, look around you to see how much light each person is getting. Break the group apart by spreading yourselves an arm's length apart. Now look to see how much light each person in your group is getting.

Answer

1. Does everyone in your group get the same amount of light when you crowd together? _____

2. If you were a tree, do you think you would get more light if you were crowded into a small space with lots of other trees or if you were not so crowded? _____

Trees, like other green plants, need sun, air, water, and soil to grow.

3. Why are the trees in this plantation planted so far apart?

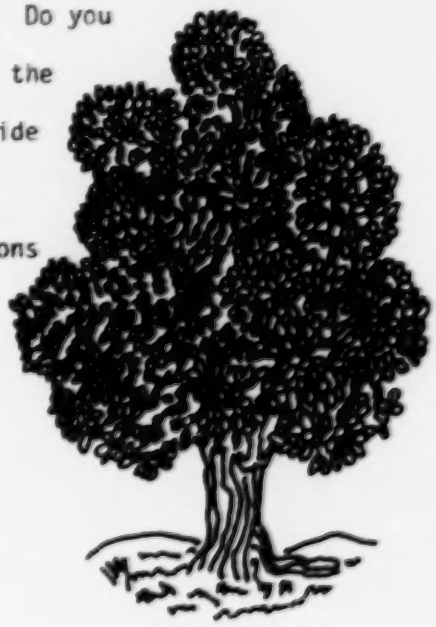
_____

4. Can you find a tree that is smaller than the other trees? Does it look like it is getting as much light as the others?

_____

The small trees will be removed because they are not growing fast enough.

5. Look around you in the plantation. Look across the street and around the edges of the plantation. Do you see more small plants growing under the trees inside the plantation or outside of the plantation? What might be a reason for this? List as many reasons as you can.



_____

_____

_____

_____

_____

Action

Look closely at the trees. The leaves of pine trees are called needles. Find a tree in the plantation. Take some needles and bark from the ground next to the tree. Look at them carefully. Draw a picture of a group of pine needles and the bark.

Answer

6. Do all the trees have the same kind of bark? _____

7. What color is the bark? _____

8. Is the bark one thick piece or is it made up of thin sheets?

_____

9. Does the bark peel off easily? _____

Bark that grows in many layers like this helps to protect the tree from fire. Pine trees can live through fires when other plants die. If fire did not burn through the pine woodlands, other plants and trees might take over and crowd out the pine trees.

10. Do you see any trees that look dead or sick? Diseases, carried by fungus or insects may spread from one tree to another. It may kill a tree or make it grow crooked. Crooked trees do not make very good lumber. Look for trees with sap coming out of holes in the bark.

11. What would happen to this plantation if a disease or pest got into one tree and started to spread? _____

_____

Info

If one tree gets a disease or is attacked by insects, all the trees in the plantation are open to attack. This is one of the troubles with having all the same kind of tree growing in one area. When there are many different kinds of trees growing in an area, it is more difficult for disease to spread. Even if it did spread, only one type of tree would be attacked. The other types would survive. The forest as a community would survive.

Action

Your group should work together during this activity. Get a length of string from the field trip leader. One person should hold the string waist high in one place. A second person should take the other end of the string, pull it tight, and begin to slowly walk around the first person, making a large circle. The third person should walk around the circle near the string and record all the different kinds of trees, as well as the total number of trees, he/she finds within the circle. You may record them by drawing them or writing them down.

Record your findings here:

kind of tree:	number of trees:
1)	
2)	
3)	
4)	
5)	
6)	
7)	
8)	

Graph — Math

$\frac{1}{100}$ of 1 acre

Go back and count the total number of trees in your circle. Total number of trees = ____.

Your string is 11 feet 9 inches long. This means your circle was equal to 1/100 of an acre of land. Calculate the density or total number of trees per acre.

Total # trees in your circle = _____

Multiply by 100 X 100

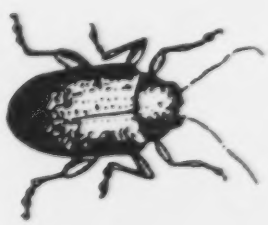
Trees per acre = _____

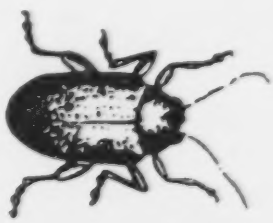
All the trees in part of a plantation are cut down at the same time. They are cut when they are old enough and big enough to harvest. In this plantation this happens about every 15 years. On the graph below, draw a line that you think represents the life cycle of a pine plantation.

Average height of trees

0 1 2 3 4 5 10 15 20 25 30 35 40 45 50 55 60

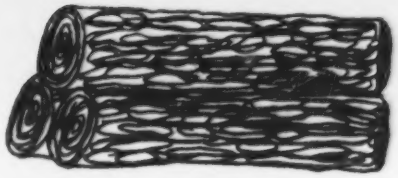
Time (in years)





Answer

12. About how long does it take a pine tree to grow large enough to be used for paper? _____



13. Wood is used for many different things. Name six things that you use that are made of wood.

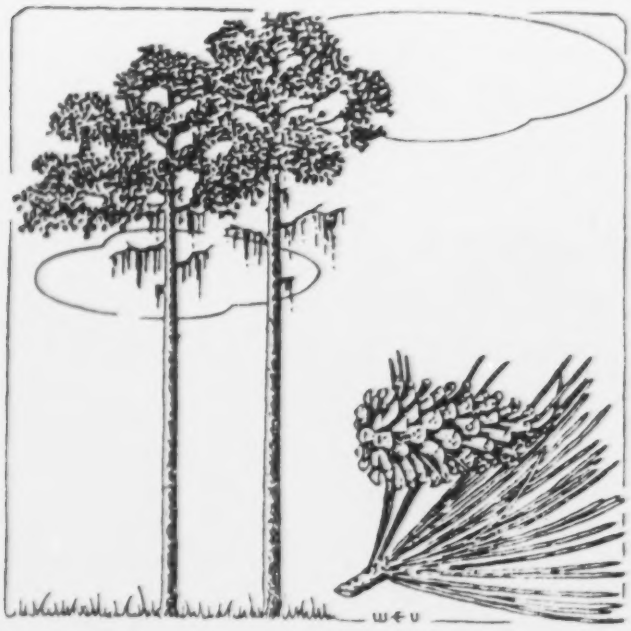
1. _____ 4. _____
2. _____ 5. _____
3. _____ 6. _____

14. What ways can you think of that a tree plantation can be used before the trees are cut down? _____

_____

15. Do you see any roads through this plantation? _____ List all the things you see that are signs that people have used the area or have done something to affect the way these pine trees grow.

_____



_____
_____
_____
_____
_____
_____
_____

SOLO

THE PINE FLATWOODS

You are now in a naturally-succeeding forest, a woodland community which is not designed by, or disturbed directly by, humans. The trees and other plants have not been planted. They got here by seeds dropping from nearby trees or from wind blowing the seeds to this area. There was probably a grassy field here before the trees. Since the area was not disturbed significantly by humans, it succeeded into a forest. While you are here, try to remember what the pine plantation was like. Look closely at this forest.

Answer

1. Look at the distance between the larger trees. About how far apart are these trees growing? _____

2. Are these trees growing farther apart than the plantation trees were planted? _____

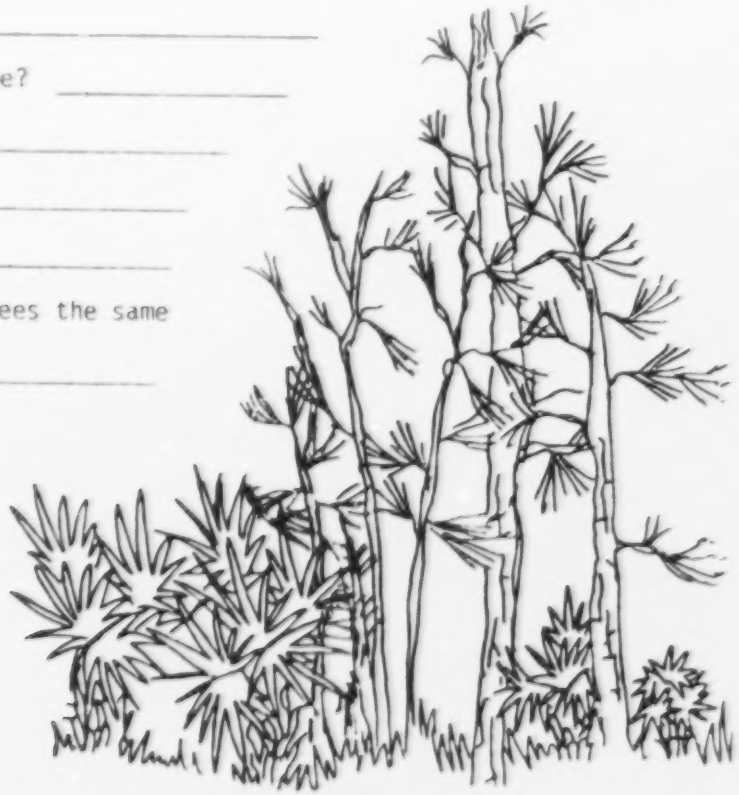
   Why might that be? _____

   _____

   _____

   _____

3. Are all these trees the same size? _____



Unlike the pine plantation, the small trees here may grow to be tall trees someday. They will still need a lot of room and some light. But, some of these plants will grow very well in the shade. These are called shade-tolerant trees. The pine trees need much sun. They grow here first. Then the other trees can grow in the shade of the pines.

4. Look around you. Do you see many smaller plants growing under the tall trees? _____

5. Why do these plants grow here and not in the pine plantation?

_____

_____

Action

Choose 3 or 4 different trees or other plants to study. Look carefully at the bark and leaves of these plants. Collect some leaves and bark from several different plants. Draw them in the space below.

6. Do all the trees in tnis forest look alike? _____

7. Do they have the same kind of bark? _____

8. Do you think this forest gets burned by fire like the pine plantation?

_____

Why? _____

9. What would happen to this forest if one kind of tree were attacked by disease or insects and died? _____

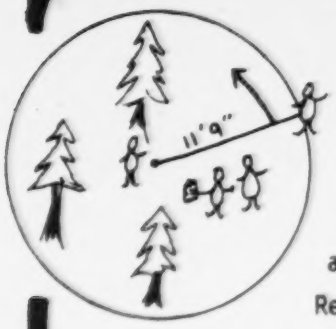
_____

10. How is this different from a pine plantation that is attacked by disease or insect pests? _____

_____

Remember that a pine plantation could be totally destroyed for timber since there is only one kind of tree there. It is easy for the disease to spread from one pine tree to another.

Action



Work together with your group on this activity. Repeat the "string" activity that you did at the pine plantation. Use the string to make a large circle. Record all the kinds of trees as well as the total number of trees in the circle. Record your findings here:

kind of tree:	number of trees:
1)	
2)	
3)	
4)	
5)	
6)	
7)	
8)	

Total number of trees in the circle = _____.

Math — Graph

$\frac{1}{100}$ of 1 acre

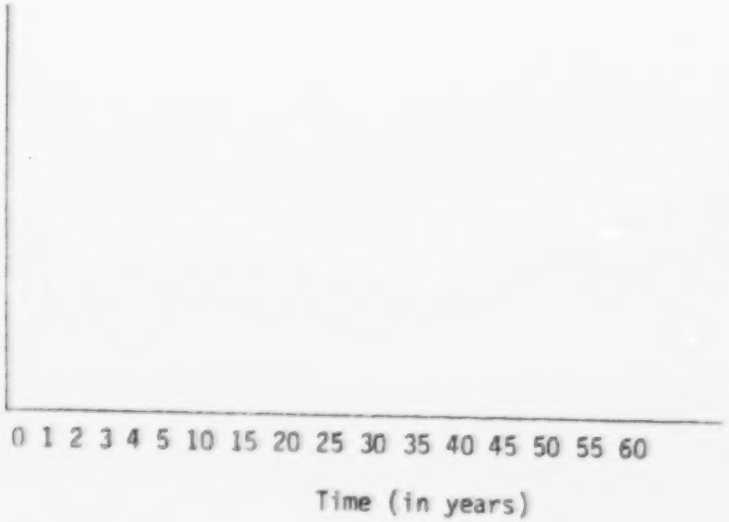
You should calculate the density or number of trees per acre to compare to the density of the pine plantation. Remember that your circle was equal to 1/100 of an acre of land. To calculate the density find

Total # trees in your circle = _____

Multiply by 100 X 100

Trees per acre = _____

On the graph below, draw a line that you think represents the life cycle of this forest. (Remember that this forest does not get harvested like the pine plantation.)



11. The naturally- succeeding forest is used in different ways from the tree plantation. How do you think this forest could be used?

_____

_____

_____

_____

12. Look for and list any signs you see that people have affected the growth of this forest. _____

_____

_____

13. Are people the only living things that use this forest? _____

_____

14. Is the forest affected by things other than people?_____

_____

SOLO

SUMMARY SHEET

Pine Plantation		Pine Flatwoods
_____	density (# of trees/acre)	_____
_____	diversity (# of different kinds of trees)	_____
_____	inputs (matter and energy)	_____
_____	outputs (uses and products)	_____
_____	disease susceptiblility	_____

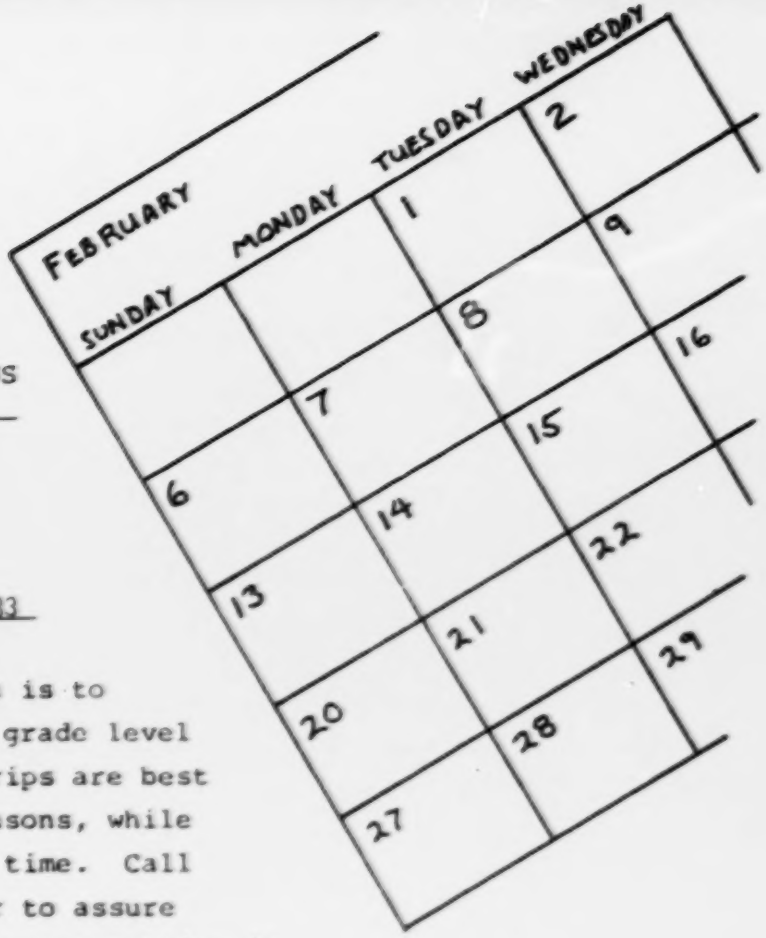
- Which area, the plantation or the forest, did you enjoy the most? _____
- Why? _____

_____

- Which area felt more comfortable? _____
- Why? _____
- Which area had more signs of animals living there? _____
- Why do you suppose this area has more animals living there? _____

_____

SCHEDULING CONSIDERATIONS



To arrange an EE/IDS community study trip, please call us at 275-3033

Our first recommendation is to use one of the standard grade level trips. Some of these trips are best done during specific seasons, while others work well at any time. Call early in the school year to assure getting a trip, and to assure getting it at the most appropriate time.

If the standard trip does not meet your needs, a custom trip could be designed. This would necessitate a meeting with EE/IDS staff to identify goals, design pre- and post-trip activities, and create a meaningful field experience. Any custom trip should have at least the impact of the standard trips. It should also mesh closely with the on-going curriculum. The classroom teacher and EE/IDS staff would share development responsibilities.

→ CALL 275-3033 ←

PARENT PERMISSION FORM

As parent or legal guardian, I hereby grant permission for _____ (student's name) to take part in a field trip, via bus to _____ (site) on _____ (date).

I understand that this trip is an integral part of the ongoing school curriculum, and that the students will be studying diversity and succession in several communities. On the trip the students should expect to be walking through woods that sometimes are damp or wet. I'll be sure that my child wears long pants and tie-on shoes.

_____
(signature of parent or guardian)

_____
(date)

_____
(emergency phone number)

This publication is one of the teaching units in the community studies series developed by the Lee County Schools, Florida.

The community study series is designed to assist teachers and students in learning through experience how the Lee County communities function, and the rights and responsibilities each of us shares in maintaining a healthy, productive community.

By systematically experiencing our community, students tend to see the pattern that connects the natural and cultural environment, and how each of us is an independent agent for change.

The community study instructional units have been field tested by teachers and students.

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The units have been produced by the staff of THE DEPARTMENT OF ENVIRONMENTAL EDUCATION AND INSTRUCTIONAL DEVELOPMENT SERVICES of Lee County School system:

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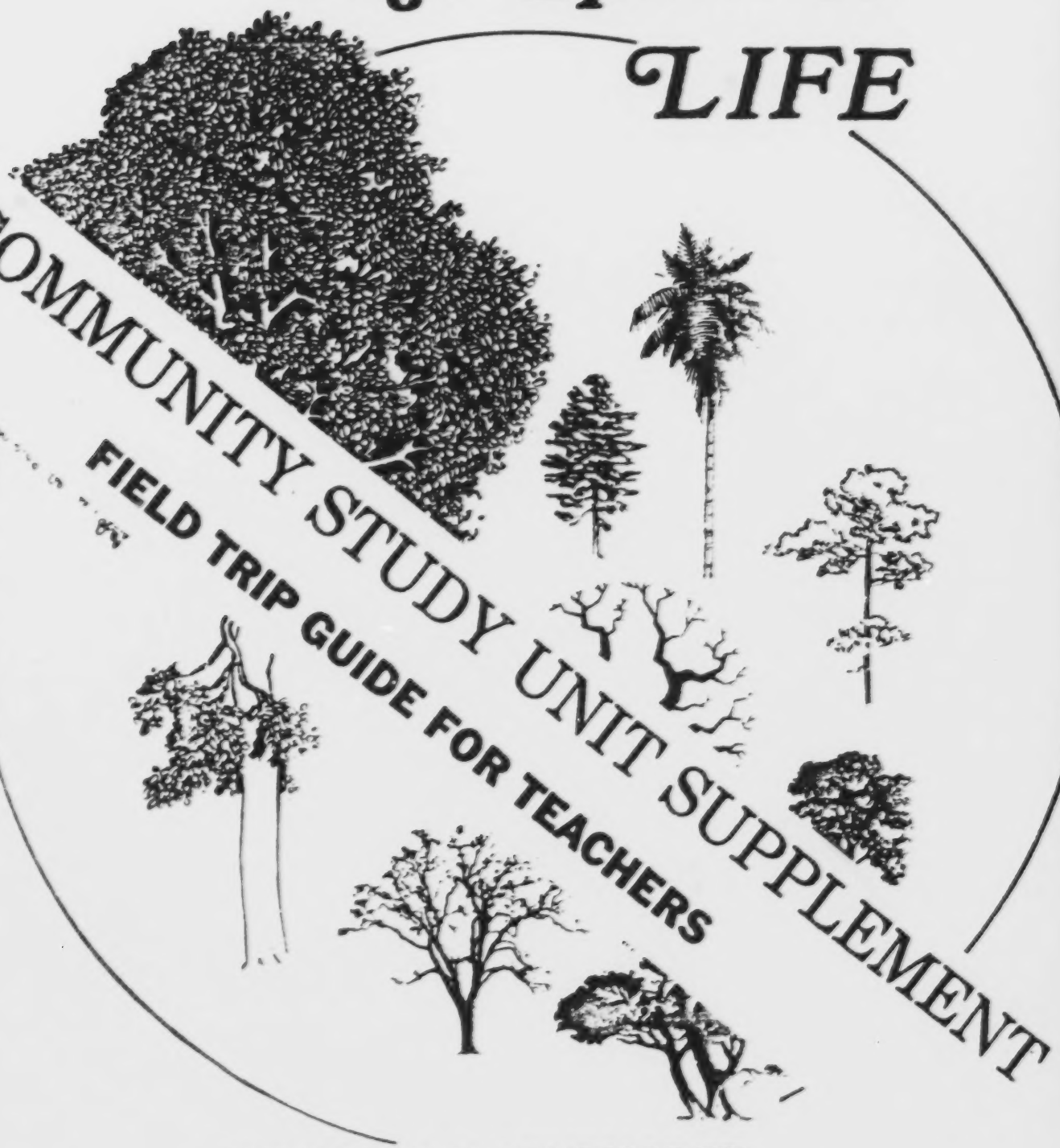
SE

The Spice of LIFE



COMMUNITY STUDY UNIT SUPPLEMENT

FIELD TRIP GUIDE FOR TEACHERS

COMMUNITY STUDY UNIT

GRADE 5

LEE COUNTY SCHOOLS

CLASSROOM TEACHER GUIDE

TO

FIFTH GRADE

SPICE OF LIFE FIELD TRIP

HOW TO USE THIS GUIDE

This field trip guide is written for the classroom teacher who is planning to lead an environmental education field trip without the assistance of an Environmental Education and Instructional Development Services (EEIDS) staff member. Please read this guide carefully. Note the safety precautions and equipment lists.

The activities are arranged in the sequence usually followed by EEIDS staff members. However, once you have read this guide and considered the needs of your class, you may choose to rearrange, add, delete or adapt activities to fit your situation. There are more activities described here than you will need. Consider them all as options from which you can select the most appropriate activities for your particular class.

In the event that several classes are at the Nature Center at the same time, you should be prepared to adjust your schedule so that you are not all trying to use the same space at the same time. Use different trails or rearrange the activities in any order suitable for you.

EQUIPMENT

The following is a list of equipment and supplies you may need for this field trip. Some of them are optional.

<u>Should be provided by teacher:</u>
cooler with lunches/drinks/ice
first aid kit
pencils
trash bags

Preparations for A Successful Field Trip

Prior to the Trip

1. Carefully read all materials sent to you by the Department of Environmental Education and Instructional Development Services.

2. We highly recommend that you visit the field trip site yourself before taking your class. It will help you be more familiar with the area and any potential problems as well as with places for leading your activities.

3. Ask the Department of EEIDS for the slide/script program designed for your trip. It will help familiarize you and your students with the trip.

4. Prepare your students for the trip by doing the activities in the teacher unit and by explaining to them what they should expect while on the field trip.

5. Call EEIDS if you have any questions regarding the field trip site or activities.

6. Find out if there are any students in your class with allergies, especially to insect bites or stings.

On the Field Trip

1. Good student behavior on field trips is just as important as in the classroom. Be sure to review with your students all the rules and policies for behavior and safety as well as the consequences for breaking those rules.

2. Demonstrate proper and safe use of all equipment and supplies to be used during the day.

3. Make sure students and adults always wear tie-on or velcro-closure shoes during the trip.

4. Be sure all students are well-supervised at all times during the day including while on the school bus. Do not send students to sit on the bus unsupervised at any time.

5. No flammable liquids are allowed on the bus.

6. If a first aid need arises, do everything possible to assure safety of all students and ask the bus driver to radio for help if necessary.

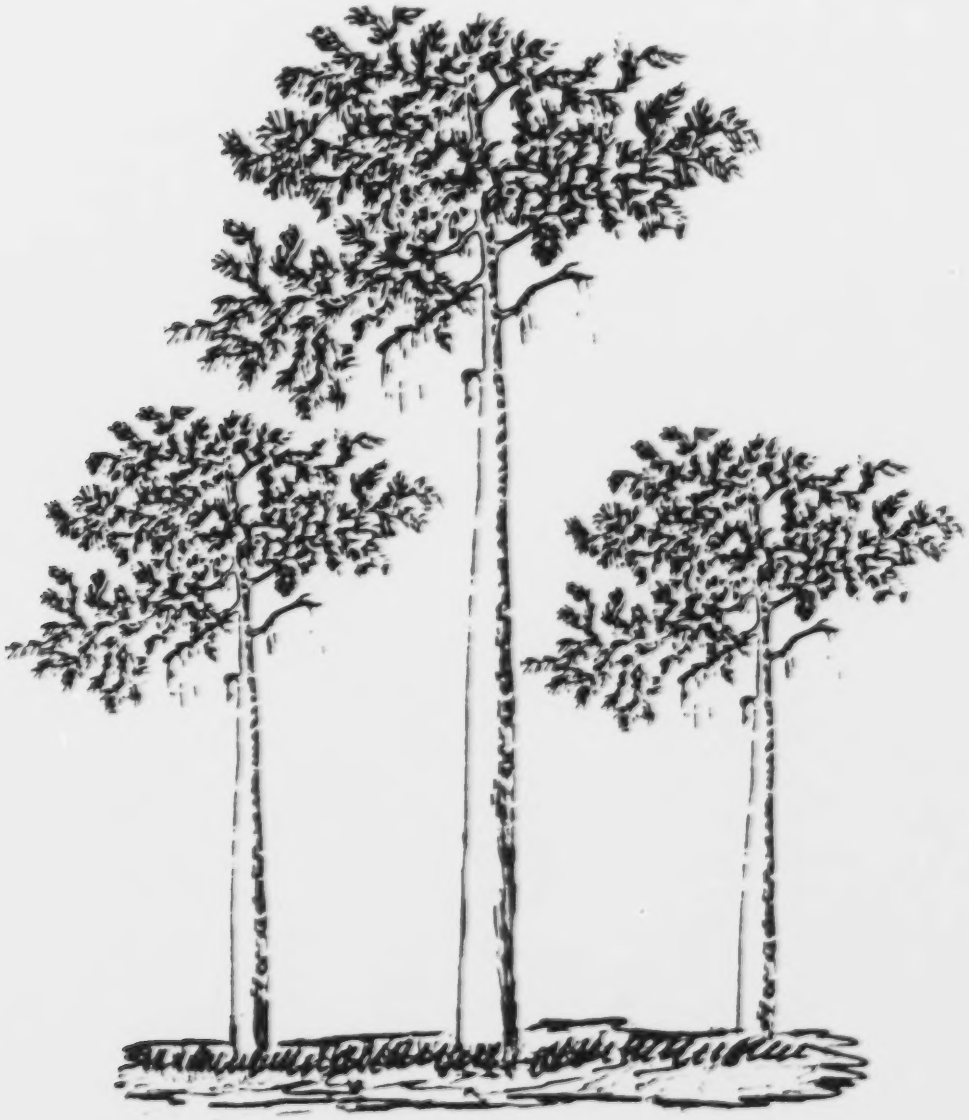
Special Considerations for

FIFTH GRADE
THE SPICE OF LIFE

1. Set boundaries for the activities <u>inside</u> the area of trees at the pine plantation.

2. Caution students about the possiblity of seeing snakes, and ask them to be careful, but not panic, if they see one. Be especially careful near the palmettoes at the Nature Center.

3. Students will be more likely to participate fully if they have on long pants to protect their legs while in the woods.



BUS ORIENTATION

Briefly describe for the students the activities for the day. Tell the students that you will be visiting two different communities and their job for the day will be to compare the way the two communities look and the way they work. One of the places you will go was designed, and is maintained, by people - the pine plantation. The second place has been left to grow in its natural state - the pine flatwoods.

Discuss with the students the words 1) community, 2) system, 3) diversity, and 4) energy. You will also want to have them understand the concept of succession, but you might hold that discussion for later in the day as you begin working in the pine flatwoods.

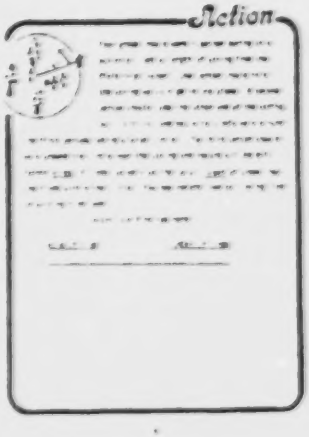
DURING THE DRIVE TO THE PINE PLANTATION

On the way to the pine plantation, have the students read the first page of their booklets. This will provide an overview of the purpose of their investigation. Ask them to read very carefully, and circle any words or phrases that they do not understand completely. Discuss these terms as soon as you arrive at the plantation. It might also be useful to have the students look through the entire booklet to get some idea about the kinds of things they will be doing there.

ARRIVAL AT THE PINE PLANTATION

One of the most convenient pine plantation sites in Lee County is in front of the Florida Power and Light generation plant on SR-80 east of I-75. Upon arrival at the pine plantation, have the students follow you off the bus to a suitable staging area. You will need to divide them into five or six groups. Be sure that the groups understand the need for working together without disturbing others working around them. They are to work as teams to complete the booklet. Define the boundaries of your study area. Instruct them not to stay within these boundaries.

Discuss with the students the format of the booklet. Tell them to read through it very carefully to avoid any problems. Before you allow them to go off on their own, it may be helpful to demonstrate how to do the Action page, on page six of their booklet, before you send them off. The instructions in the booklet are clear but sometimes it helps to go through it with the students first. Tell them that you will be circulating around to the groups to offer help if they need it. They will need about 45 minutes to complete pages one through eight in their booklets.



SOLO ACTIVITY

When the students reach the end of page 8 have them gather together for instructions on how to do the Solo on page 9. This activity requires a proper set-up to be successful. Tell the students that what they put on this page will be different from anything else they have done so far. This activity, and what they do on the Solo page are for themselves, not for the teacher. You should allow plenty of time for individuals to share their Solos later if they want to, but it is strictly optional.

Tell the students that, in a couple of minutes, you will ask them to find a comfortable place away from everyone else in the group but within the boundaries established. Once they have found their spot to sit, they should remain still and quiet. A ten second practice solo sometimes helps them to understand what still and quiet means. This can be a very powerful way to discover what this plantation is really all about. You want them to try to get a feel for what the plantation is trying to say to them. Encourage them to use all of their senses, to listen carefully to the sounds they can hear, to look closely at everything around them, to feel the ground, the bark of the trees, the breeze, and to smell the scents of the pinecones and the nearby wildflowers. Ask the students to spend a few minutes simply sitting, watching, smelling, etc. and to then pick up their booklets and capture some of their thoughts and feelings on page nine. They may record their thoughts through words or pictures or both. Encourage their creativity.

Allow the students to go find their spot. Instruct them to stay in their spot until you call everyone back. Let the solo go as long as the students remain still and quiet. Ten minutes is a good length of time, but fifteen or even twenty is great if you have the time available. When you call the students back together, gather in a circle, and ask for volunteers to share their solo experiences or thoughts with the group. Remember, this is intended to be a personal activity and sharing should be on a voluntary basis. Encourage it, but don't force it.

LUNCH

After your sharing session, board the bus and drive to the Nature Center of Lee County on the corner of Ortiz Avenue and Colonial Boulevard. Have the students gather under the building near the picnic tables. Leave their lunches and booklets on the tables then take them upstairs into the building to use the restrooms before they eat. We do not allow students to purchase items from gift shops or vending machines during field trips.

THE FOREST AT THE NATURE CENTER

Have the students gather for an introductory discussion about the afternoon's activities (the pavillion on the pine loop is a good spot for this; turn right at the aviary). Introduce the concept of natural succession. Help students identify the many different kinds of trees in the pine flatwoods - oaks, pines, wax myrtles, meleleuca (paper trees), hollies, Brazilian peppers, and palmettoes. Contrast the pine plantation with the forest at the Nature Center. Divide the students into their groups again and help them find suitable places to complete their investigation in the booklets. The pine loop beyond the pavilion has some good spots where the students can work. There are many areas throughout the flatwoods that will work well.

Since the students will be familiar with the activities, they should be able to complete this portion of the booklet more quickly. When the activities are completed, compare and contrast the the two areas they visited today using the summary sheet on page 17. Talk about the diversity differences in the two areas, and the kinds of products that are produced from each of the areas.

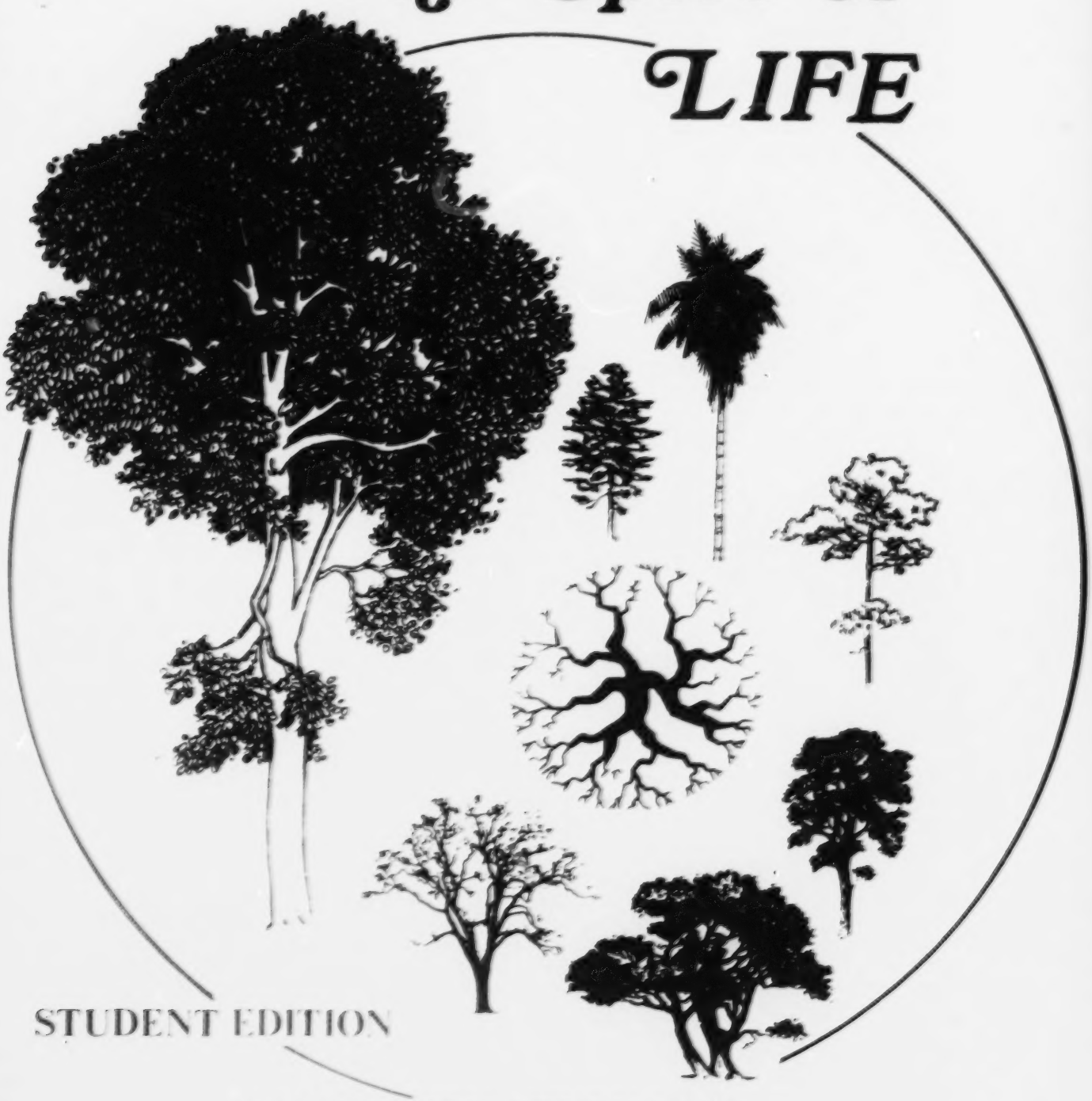
To allow plenty of time for the students to complete a solo (within boundaries), record their thoughts, and share their thoughts, you might want to do the wrap-up discussion back at school.

DEPART FOR SCHOOL

Return to the picnic tables to gather any coolers and personal belongings that may have been left there and board the bus for the return trip to school.

SE

The Spice of LIFE



STUDENT EDITION

COMMUNITY STUDY UNIT

GRADE 5

LEE COUNTY SCHOOLS

4/87

THE SCHOOL BOARD OF LEE COUNTY

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Fort Myers, Florida

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THE SPICE OF LIFE

Today you will be visiting two communities. Once you complete this booklet you should be able to tell the things that come into and go out of each community. You will also be able to tell which community is more diverse (has more variety). You should work in groups of three to six people. Read the booklet carefully. Record your answers accurately. Answer all the questions.

BACKGROUND INFORMATION

The energy that goes into a community can affect the kinds of plants and animals that live there. The energy can also affect the products that come out of the community. A community with many different kinds of plants and animals is more diverse, or has more variety, than a community with very few kinds of plants and animals. One of the woodland communities you will visit today receives energy solely from the sun. The other community receives energy from the sun as well as various other sources. One community has many different kinds of plants. One has very few kinds of plants. It is your task today to determine the differences between these communities.

THE PINE PLANTATION

A tree farm is sometimes called a plantation. This is a pine plantation. A pine plantation is planted by people for their own use. Before the trees are planted, all other trees and plants are removed from the area. In this pine plantation, slash pine was planted. Slash pine grows very fast. When the small trees were one year old they were moved from a nursery to the plantation. The foresters planted these trees during the winter months.

The trees are planted six feet apart in rows. The rows are ten feet apart. When we plant trees in rows we call the area a tree plantation. The slash pine plantation is very much like a farmer's corn field. The big difference is that the trees take about 15 years to grow to the right size for harvesting, instead of a single season. The trees in this plantation will be used to make paper products. If they were to be used for lumber, they would have to grow longer and get bigger.

Action

With the other people in your group, crowd together as closely as possible. While the group is together, look around you to see how much light each person is getting. Break the group apart by spreading yourselves an arm's length apart. Now look to see how much light each person in your group is getting.

1. Does everyone in your group get the same amount of light when you crowd together? _____

2. If you were a tree, do you think you would get more light if you were crowded into a small space with lots of other trees or if you were not so crowded? _____

Trees, like other green plants, need sun, air, water, and soil to grow.

3. Why are the trees in this plantation planted so far apart?

_____

4. Look for a tree that is smaller than the other trees. Does it look like it is getting as much light as the others?

_____

The small trees will be removed because they are not growing fast enough.

5. Look around you in the plantation. Look across the street and around the edges of the plantation. Do you see more small plants growing under the trees inside the plantation or outside of the plantation? _____

List as many reasons as you can for why that might be true. _____

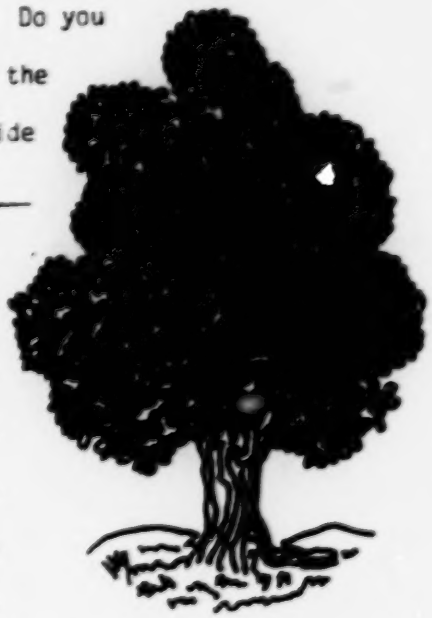
_____

_____

_____

_____

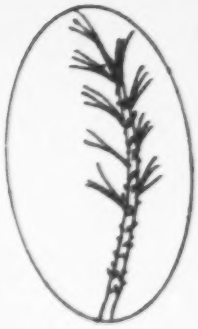
_____



Answer

Action

Look closely at the trees. The leaves of pine trees are called needles. Find a tree in the plantation. Take some needles and bark from the ground next to the tree. Look at them carefully. Draw a picture of a group of pine needles and the bark.



Answer

6. Do all the trees have the same kind of bark? _____

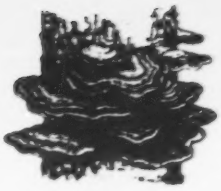
7. What color is the bark? _____

8. Is the bark one thick piece or is it made up of thin sheets?

_____

9. Does the bark peel off easily? _____

Bark that grows in many layers like this helps to protect the tree from fire. Pine trees can live through fires when other plants die. If fire did not burn through the pine woodlands, other plants and trees might take over and crowd out the pine trees.



10. Do you see any trees that look dead or sick? Diseases, carried by fungus or insects, may spread from one tree to another. It may kill a tree or make it grow crooked. Crooked trees do not make very good lumber. Look for trees with sap coming out of holes in the bark.

11. What would happen to this plantation if a disease or pest got into one tree and started to spread? _____

_____

Info

If one tree gets a disease or is attacked by insects, all the trees in the plantation are open to attack. This is one of the troubles with having all the same kind of tree growing in one area. When there are many different kinds of trees growing in an area, it is more difficult for disease to spread. Even if it did spread, only one type of tree would be attacked. The other types would survive. The forest as a community would survive.

Action

Your group should work together during this activity. Get a length of string from the field trip leader. One person should hold the string waist high in one place. A second person should take the other end of the string, pull it tight, and begin to slowly walk around the first person, making a large circle. The third person should walk around the circle near the string and record all the different kinds of trees, as well as the total number of trees, he/she finds within the circle. You may record them by drawing them or writing them down.

Record your findings here:

kind of tree: number of trees:

1) _____

$\frac{1}{100}$ of 1 acre

Go back and count the total number of trees in your circle. Total number of trees = ____.

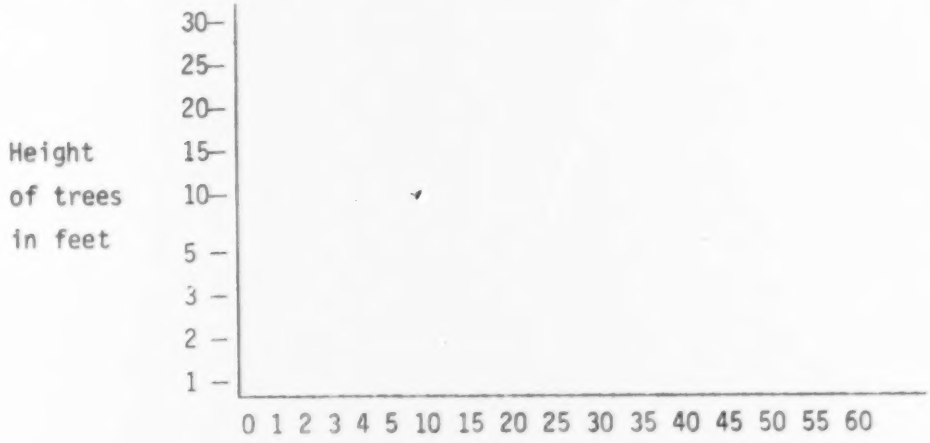
Your string is 11 feet 9 inches long. This means your circle was equal to 1/100 of an acre of land. Calculate the density. Density is the total number of trees in a given area.

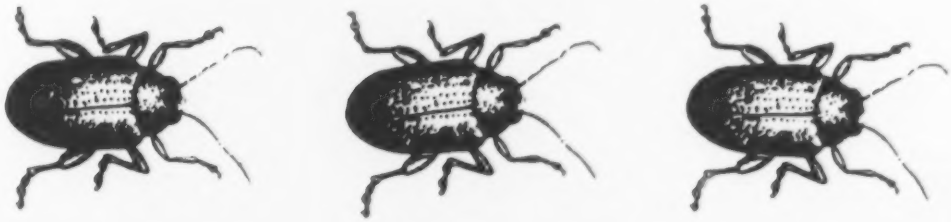
Total # trees in your circle = _____

Multiply by 100 X 100

Trees per acre = _____

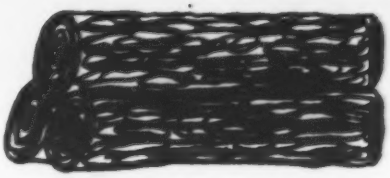
All the trees in part of a plantation are cut down at the same time. They are cut when they are old enough and big enough to harvest. In this plantation this happens about every 15 years. On the graph below, draw a line that you think represents the life cycle of a pine plantation.





Answer

12. About how long does it take a pine tree to grow large enough to be used for paper? _____



13. Wood is used for many different things. Name six things that you use that are made of wood.

1. _____ 4. _____

2. _____ 5. _____

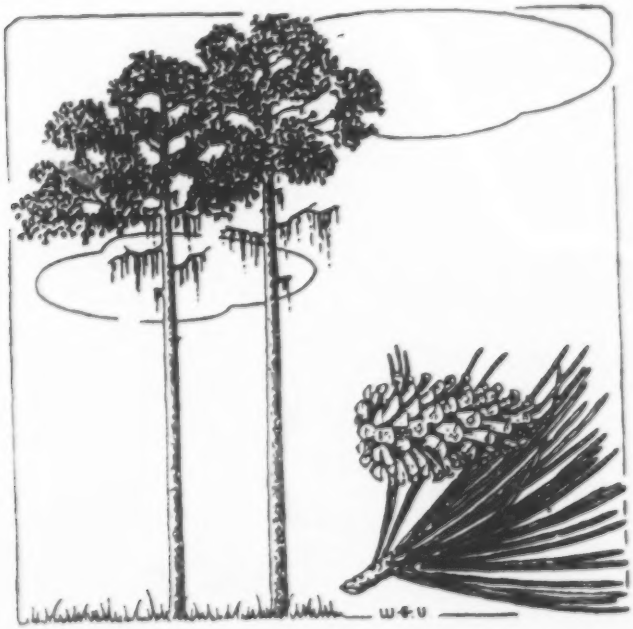
3. _____ 6. _____

14. What ways can you think of that a tree plantation can be used before the trees are cut down? _____

_____

15. List all the things you see that are clues that people have used the area or have done something to affect the way these pine trees grow.

_____



_____

_____

_____

_____

_____

_____

_____

SOLO

THE PINE FLATWOODS

You are now in a naturally-succeeding forest, a woodland community which is not designed by, or disturbed directly by, humans. The trees and other plants have not been planted. They got here by seeds dropping from nearby trees or from wind blowing the seeds to this area. There was probably a grassy field here before the trees. Since the area was not disturbed significantly by humans, it succeeded into a forest. While you are here, try to remember what the pine plantation was like. Look closely at this forest.

Answer

1. Look at the distance between the larger trees. About how far apart are these trees growing? _____

2. Are these trees growing farther apart than the plantation trees were planted? _____

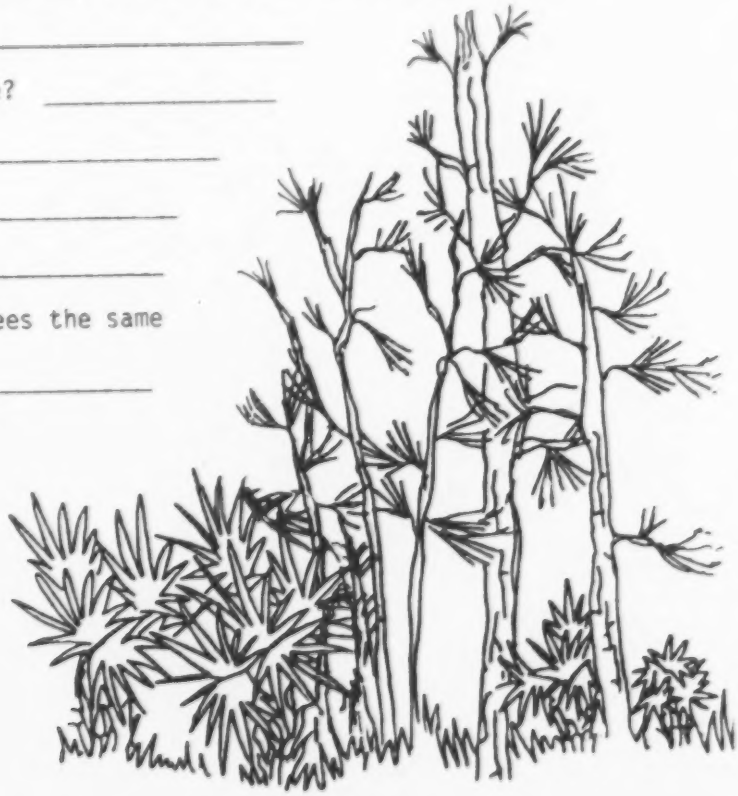
   Why might that be? _____

   _____

   _____

   _____

3. Are all these trees the same size? _____



Unlike the pine plantation, the small trees here may grow to be tall trees someday. They will still need a lot of room and some light. But, some of these plants will grow very well in the shade. These are called **shade-tolerant trees**. The pine trees need much sun. They grow here first. Then the other trees can grow in the shade of the pines.

4. Look around you. Do you see many smaller plants growing under the tall trees? _____

5. Why do these plants grow here and not in the pine plantation?

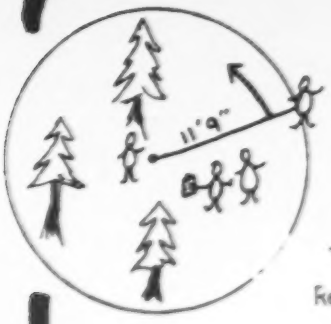
_____

_____

Action

Choose 3 or 4 different trees or other plants to study. Look carefully at the bark and leaves of these plants. Collect some leaves and bark from several different plants. Draw them in the space below.

Action



Work together with your group on this activity. Repeat the "string" activity that you did at the pine plantation. Use the string to make a large circle. Record all the kinds of trees as well -- the total number of trees in the circle.

Record your findings here:

	kind of tree:	number of trees:
1)		
2)		
3)		
4)		
5)		
6)		
7)		
8)		

Total number of trees in the circle = _____.

Math — Graph

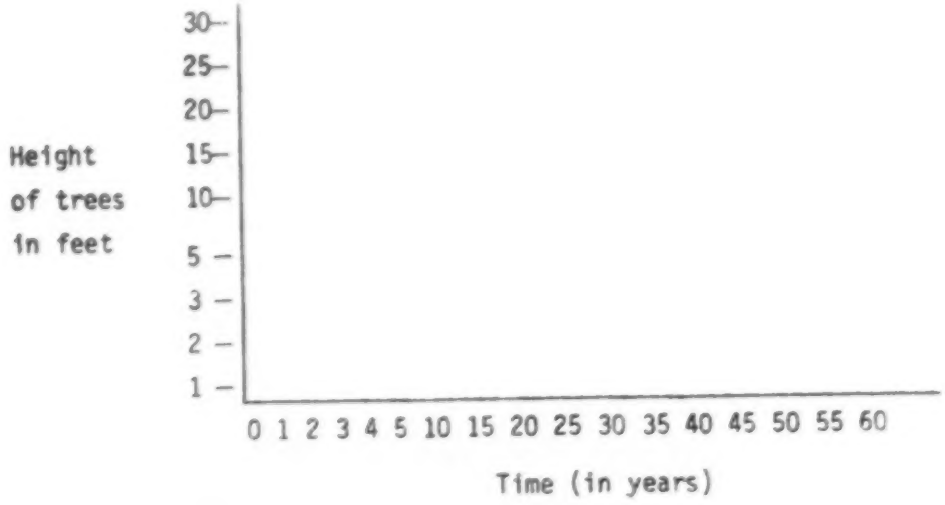
$\frac{1}{100}$ of 1 acre

You should calculate the density or number of trees per acre to compare to the density of the pine plantation. Remember that your circle was equal to 1/100 of an acre of land. To calculate the density find

Total # trees in your circle = _____
Multiply by 100 X 100

Trees per acre = _____

On the graph below, draw a line that you think represents the life cycle of this forest. (Remember that this forest does not get harvested like the pine plantation.)



11. The naturally- succeeding forest is used in different ways from the tree plantation. How do you think this forest could be used?

_____

_____

_____

_____

12. Look for and list any clues you see that people have affected the growth of this forest. _____

_____

_____

13. List some signs that animals live in this pine flatwoods._____

_____

14. Is the forest affected by things other than people?_____

_____

SOLO

SUMMARY SHEET

Pine Plantation		Pine Flatwoods
_____	Density (# of trees per acre)	_____
_____	Diversity (# of different kinds of trees)	_____
_____	Inputs (matter and energy)	_____
_____		_____
_____		_____
_____	Outputs (uses and products)	_____
_____		_____
_____		_____

Which area did you enjoy the most, the pine plantation or the pine flatwoods? _____

Why? _____

Which area felt more comfortable to you? _____

Why? _____

Which area had more signs of animals living there? _____

Why do you suppose this area has more animals living there? _____

This publication is one of the teaching units in the community studies series developed by the Lee County Schools, Florida.

The community study series is designed to assist teachers and students in learning through experience how the Lee County communities function, and the rights and responsibilities each of us shares in maintaining a healthy, productive community.

By systematically experiencing our community, students tend to see the pattern that connects the natural and cultural environment, and how each of us is an independent agent for change.

The community study instructional units have been field tested by teachers and students.

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